Now one essential element in the proof of the theory of inheritance in cancer is the numerical one; and it cannot be said to be very strong even now. If it should once be learned that cancer is in any way contagious (and all the arguments from analogy drawn in the paper before us, without counting clinical facts left unnoticed by it, would incline one to suspect that it may be contagious) where will then be the arguments drawn from figures in support of the theory of cancerous inheritance?

But it is, after all, not from speculation, or at least not directly from it, that we have most reason to hope for answers to the various questions concerning cancer. It is a curious circumstance that just now in England and France respectively, the two most representative surgeons of those countries should be advancing, as deductions from clinical observations, hypotheses which are in some but not all respects identical with theories which surgeons of a younger school in America and Germany claim to have demonstrated by experiment.

C. B. KEETLEY.

GASTROENTEROSTOMY IN LUECKE'S CLINIC.[1]

Before the introduction of this operation by Wölfler unfortunate patients were treated symptomatically. The first complete details of operated cases were given fully in a brochure of v. Hacker, which was a collection of eight cases operated upon in Billroth's clinic. Five of these cases died from the effects of the operation, three were improved. Saltzmann, publishing a series of 23 cases, of which 18 had malignant disease, gives a mortality of twelve following the operation. Both these statistics are certainly unsatisfactory as to the ultimate promise of the operative interference. Rockwitz has collated twenty-two cases from the literature of gastro-enterostomy. Twenty-one of these were performed outside of the Strassburg clinic. Seventeen of the cases were performed for carcinoma and four for cicatricial stenosis

[1]Die Gastro-enterostomie an der Strassburger Klinik, von Dr. C. Rockwitz, Assistenz Artzt. *Deutsche Zeitschrift. f. Chirurgie*, bd. xxv, hft. 6.

of the pylorus and duodenum. Nine cases recovered; of these six were cancer.

The total mortality was 57.2% and in carcinoma it was 64.7%. Eleven patients died from the immediate effects of the operation. One died four weeks subsequently of marasmus. The remaining cases survived the operation and lived months after free from symptoms. The cases of cicatricial stricture were completely cured. The uncommonly high rate of mortality is striking, and is to be attributed to different circumstances. In all, the mode of operating is no doubt an important factor. Gastro-enterostomy is in most cases easily carried out, and this seems to have been the truth as applied to the cases in the Strassburg clinic. In all, eight cases were operated upon in this clinic. In most of the patients a pylorus resection had been at first thought of, but abandoned subsequently on account of the extensive adhesions formed by the new growth. In six cases there was carcinoma of the pylorus, while in one case the stenosing pylorus tumor was of doubtful nature. Another was a case of stenosing cicatrix following an ulcer of the pylorus, with adhesions to the surrounding viscera and infiltration of the surrounding connective tissue. Six cases occurred in males. In carcinoma the ages ranged from 30 to 50 years. All the cases were in very bad condition before, but none died immediately after the operation from either collapse or peritonitis. One patient died after two weeks of inanition and pneumonia.

In all the rest the wished-for effects of the operation were speedily attained. One patient, probably suffering from a carcinomatous growth in the pylorus, lives still (1 year after operation), free from stomach symptoms and enjoys good health. The case of cicatricial stenosis, though suffering from pulmonary phthisis, is free from stomach symptoms. A case recorded by Fischer, of the Strassburg clinic, was one of carcinoma and lived one year and two months. In one case death followed 3 months after operation.

Of especial interest are those cases which came to autopsy. In one of these compression of the transverse colon was found caused by the mesentery of the coil of intestine which had been fixed to the stomach. In another the gastro-intestinal fistula was so contracted by

cicatricial and spur formations, that the avenue of entrance to the intestine was obstructed. In the third case the gastro-intestinal fistula was satisfactory. The two latter cases died of general carcinosis. The mortality in the Strassburg clinic (Prof. Lücke) was 12.5%. The above cases added to those already published from all sources give a mortality of 44.8%.

A pylorus the seat of malignant growth gives rise to few symptoms other than those found in gastric catarrh, if no stenosis be present. Once having caused stenosis, the growth threatens the life of the patient and causes dangerous stomach symptoms. Gastro-enterostomy aims to eliminate the obstruction to the passage of food from the stomach to the intestine. It does this successfully by diverting it through a gastro-intestinal fistula. The pylorus and duodenum remain inactive, but do not by this compromise the general condition of the patient. In stenosis of the pylorus of non-malignant nature the patient becomes permanently cured. Pain with the other symptoms disappear after operation.

Gastro-enterostomy is only indicated in those cases where radical cure is not possible; it does not take the place of pylorus resection in *curable* cases (pylorectomy). In slight and easily isolated malignant growths the gastro-enterostomy yields place to pylorectomy. The prognosis in cases of pylorectomy is very bad, and under the best conditions the cases which have remained free from metastases are discouragingly small in number. Of 52 cases of carcinoma *selected* for operation *only 5* were found free from metastases. The mortality in pylorectomy for carcinoma reaches at present 75%. In this figure we find no assurance as to how many of the surviving 25% died of a return of the disease.

The indications for the one or the other operation are very difficult to lay down by absolute rule. Adhesions to the pancreas contraindicate pylorectomy. The extension of the growth over the duodenum puts great difficulties in the way of the operator (Wölfler). Adhesions of the tumor to the liver may contraindicate gastrectomy. Adhesions to the omentum, colon and the abdominal wall within certain limits are less to be feared. The greater the surface exposed by

divided adhesions the greater the danger of infection. In many cases of gastro-enterostomy we find adhesions to the liver recorded. The greater the extent of the pylorus tumor and the more the wall of the stomach is affected, the greater becomes the danger of the operation. Convinced that the operation of gastro-enterostomy was palliative in its indication, Lücke has avoided all manipulation of the new growth and its adhesions. Dr. Rockwitz considers this an element of the success attending the operation.

The operative procedures, both as to technique and duration were of such a nature as not to exhaust the powers of the patient. It is impossible to do more than touch upon the most interesting points considered exhaustively by the author. The patients must receive a thorough preparation for operation, the stomach for days previous to operation is washed out at frequent intervals. Infusion of senna is used to keep the bowels clear. On the day of the operation and an hour before operation the stomach is thoroughly washed out; just before the operation an opium rectal injection is administered in order to quiet peristaltic action. During the operation antisepsis is carried out in every detail, without spray. The abdomen is opened in the linea alba. Those cases where the stomach is divided are most favorable. The gastric fistula is in all cases contemplated at the most dependent portion of the stomach. The stomach and intestine are clamped with rubber-covered steel clamps before opening. It is not important what sutures or mode of suture is employed. The exact application of the suture is the most essential factor. Button silk suture and Lembert's peritoneal sutures were used by Lücke. Most of the patients during and after the operation remained until the following day in a condition of collapse so that all aids, camphor, wine, warmth, against this condition must be at hand.

The operation is thoroughly justifiable for several reasons: Gastro-enterostomy restores the normal avenues of nutrition. It is indicated in stenosis of the pylorus or duodenum where resection is not possible, and in all cases of carcinoma with glandular infection. Pylorus resection is contraindicated where there are extensive adhesions and glandular infections and adhesion to the pancreas. Above all

things division of adhesions, isolation, and manipulation are to be avoided in the abdominal cavity during operation.

Good preparation of the patient is essential, and the linea alba incision is most preferred and gives less hemorrhage. It matters little if the loop of intestine is not the nearest possible one to the duodenum; therefore prolonged search is to be deprecated. The most convenient and easily applied loop should be selected, merely seeing that it is of smallest possible calibre. Nothnagel's chloride of sodium test may be used to find out the direction of peristalsis. Compression of the colon by the mesentery of the sutured gut is not common or probable, and therefore complicated methods of suturing the gut to the stomach fistula (v. Hacker) should be avoided. Spur formations, etc., cannot be avoided by any of the newly proposed procedures in suturing. The peristalsis of the intestine and stomach should correspond in direction (right to left). Symptoms of disturbance of peristalsis during convalescence are best relieved by the stomach pump. As gastro-enterostomy is palliative in its aim and stomach resection curative, it is of vast importance that the correct cases be selected for either operation. The former operation plays a role similar to that of tracheotomy in stenosis of the larynx. It removes dangerous symptoms, and makes life bearable to the patient. In non-malignant growths it is curative.

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